

Appl. No. 10/804,758
Amendment dated October 31, 2007
Reply to Office action of August 27, 2007

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-13. (canceled)

14. A sensor system for controlling a vehicle steering system, which sensor system comprises:

a global navigation satellite sensor (GNSS) attitude subsystem including a receiver and multiple antennas connected to said receiver at a fixed spacing, said GNSS attitude subsystem computing reference attitude angles;

a yaw gyroscope connected to said GNSS attitude subsystem and configured to derive and provide an output including a yaw angular rate of change;

said GNSS attitude subsystem including a function for calibrating bias and scale factor errors in the yaw gyroscope using said reference attitude angles; and

a steering control subsystem connected to said GNSS attitude subsystem and using said yaw angle rate of change output from said yaw gyroscope for computing and outputting steering control commands to the vehicle steering system.

15. The system according to claim 14, which includes:

said yaw gyroscope output including a yaw angle; and

said steering control subsystem using said yaw angle output from said yaw gyroscope for computing and outputting steering control commands to the vehicle steering system.

16. The system according to claim 14, which includes:

a roll gyroscope connected to said GNSS attitude subsystem and configured to derive and provide an output including a roll angular rate of change;

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said GNSS attitude subsystem including a function for calibrating bias and scale factor errors in the roll gyroscope using said reference attitude angles; and a steering control subsystem connected to said GNSS attitude subsystem and using said roll angle rate of change output from said roll gyroscope for computing and outputting steering control commands to the vehicle steering system.

17. The system according to claim 16, which includes:

said roll gyroscope output including a roll angle; and
said steering control subsystem using said roll angle output from said roll gyroscope for computing and outputting steering control commands to the vehicle steering system.

18. The system according to claim 16, which includes:

said GNSS attitude subsystem deriving said steering control commands from a combination of yaw and roll gyroscope outputs and GNSS-derived attitude reference yaw and roll angles.

19. The system according to claim 18, which includes:

said GNSS attitude subsystem deriving a roll angle; and
said steering control system using said roll angle to compensate for vehicle roll in said steering control commands.

20. The system according to claim 19, which includes:

said roll angle compensation function being enhanced by said roll gyroscope output.

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21. A method of controlling a vehicle steering system, which comprises the steps of:

providing a global navigation satellite sensor (GNSS) attitude subsystem including a receiver and multiple antennas connected to said receiver at a fixed spacing; computing reference attitude angles with said GNSS attitude subsystem; providing a yaw gyroscope connected to said GNSS attitude subsystem; configuring said yaw gyroscope to derive and provide an output including a yaw angle rate of change; said GNSS attitude subsystem calibrating bias and scale factor errors in said yaw gyroscope using said reference attitude angles; and using said yaw angle rate of change output from said yaw gyroscope for computing and outputting steering control commands to the vehicle steering system.